

LISTING OF CLAIMS

This listing of claims will replace all prior version, and listings, of claims in the application:

Cancel claims 1-77.

78. (new) An apparatus for treating ocular disease in a patient, the apparatus comprising:
a locating device, the locating device having a tissue contacting surface configured for contacting an exterior surface of the patient's eye, the locating device adapted for non-invasively locating Schlemm's Canal within the patient's eye and for indicating when Schlemm's Canal is located in a imaging plane that extends distally from the tissue contacting surface of the locating device;
a microsurgical device;
and a surgical access device physically coupled to the locating device for guiding the microsurgical device in relation to the locating device, the surgical access device being configured to access Schlemm's Canal within the imaging plane of the locating device and to deliver the microsurgical device into Schlemm's Canal along a path spaced apart distally from the tissue contacting surface of the locating device and approximately parallel to the tissue contacting surface of the locating device.

79. (new) The apparatus of claim 78, wherein the locating device comprises an ultrasound imaging transducer.

80. (new) The apparatus of claim 79, further comprising an image processing system and a display device for displaying an ultrasound image of the eye produced by the ultrasound imaging transducer of the locating device, the ultrasound image of the eye providing a visual indication of when Schlemm's Canal is located in the imaging plane of the locating device distal to the tissue contacting surface of the locating device.

81. (new) The apparatus of claim 79, wherein the ultrasound imaging transducer operates at an ultrasound frequency of at least 10 MHz.
82. (new) The apparatus of claim 79, wherein the ultrasound imaging transducer operates at an ultrasound frequency of at least 40 MHz.
83. (new) The apparatus of claim 79, further comprising means to introduce an ultrasound contrast agent into the patient's aqueous humor.
84. (new) The apparatus of claim 79, wherein the locating device further comprises an audible or visible signal to indicate when Schlemm's Canal is located in the imaging plane of the locating device distal to the tissue contacting surface of the locating device.
85. (new) The apparatus of claim 79, wherein the tissue contacting surface of the locating means is curved to approximate a curve of the exterior surface on an anterior of the patient's eye.
86. (new) The apparatus of claim 85, wherein the locating means further comprises a raised ridge around a periphery of the tissue contacting surface.
87. (new) The apparatus of claim 78, wherein the microsurgical device comprises a microcannula.
88. (new) The apparatus of claim 87 wherein a distal portion of the microcannula is curved with a radius of approximately 12-14 mm to accommodate a curvature of Schlemm's Canal.
89. (new) The apparatus of claim 87, wherein the microcannula has an outer diameter of less than 200 microns.

90. (new) The apparatus of claim 87, wherein the microcannula incorporates a cutting tip to penetrate a sclera of the eye.

91. (new) The apparatus of claim 87, further comprising an inflatable dilating balloon mounted on a distal end of the microcannula.

92. (new) The apparatus of claim 87, further comprising a device having an inflatable dilating balloon mounted on a distal end of the device, wherein the distal end of the device is configured for insertion through the microcannula.

93. (new) The apparatus of claim 78, further comprising an implant configured for implantation by the microsurgical device into Schlemm's Canal to maintain flow of aqueous humor.

94. (new) The apparatus of claim 93, wherein the implant comprises a stent.

95. (new) The apparatus of claim 94, wherein the stent comprises a biodegradable material.

96. (new) The apparatus of claim 93, wherein the implant comprises microparticles.

97. (new) The apparatus of claim 96, wherein the microparticles comprise a biodegradable material.

98. (new) The apparatus of claim 93, wherein the implant comprises microspheres.

99. (new) The apparatus of claim 98, wherein the microspheres comprise a biodegradable material.

100. (new) The apparatus of claim 93, wherein the implant comprises a drug releasing material.

101. (new) The apparatus of claim 100, wherein the drug releasing material contains a drug effective in the treatment of glaucoma.
102. (new) The apparatus of claim 78, wherein the locating device comprises an optical detector.
103. (new) The apparatus of claim 102, further comprising an image processing system and a display device for displaying an optical image of the eye produced by the optical detector of the locating device, the optical image of the eye providing a visual indication of when Schlemm's Canal is located in the imaging plane of the locating device distal to the tissue contacting surface of the locating device.
104. (new) The apparatus of claim 102, wherein the locating device further comprises an audible or visible signal to indicate when Schlemm's Canal is located in the imaging plane of the locating device distal to the tissue contacting surface of the locating device.
105. (new) The apparatus of claim 102, further comprising means to introduce a fluorescent tracer into the patient's aqueous humor.
106. (new) The apparatus of claim 102, wherein the optical detector comprises a high intensity white light illumination source.
107. (new) The apparatus of claim 102, wherein the optical detector comprises an optically coherent illumination source.
108. (new) The apparatus of claim 102, wherein the optical detector comprises a fiber optic device.
109. (new) The apparatus of claim 102, wherein the optical detector utilizes detection via visible wavelengths of light.

110. (new) The apparatus of claim 102, wherein the optical detector utilizes detection via infrared wavelengths .

111. (new) An apparatus for treating ocular disease in a patient, comprising:
a handle, the handle having a longitudinal axis;
a locating device, the locating device having a tissue contacting surface configured for contacting an exterior surface of the patient's eye, the locating device being coupled to the handle such that the tissue contacting surface is approximately perpendicular to the longitudinal axis of the handle, the locating device adapted for non-invasively locating Schlemm's Canal within the patient's eye and for indicating when Schlemm's Canal is located in a imaging plane that extends distally from the tissue contacting surface of the locating device;
a microsurgical device;
and a surgical access device physically coupled to the locating device for guiding the microsurgical device in relation to the locating device, the surgical access device being configured to access Schlemm's Canal within the imaging plane of the locating device and to deliver the microsurgical device into Schlemm's Canal along a path spaced apart distally from the tissue contacting surface of the locating device and approximately perpendicular to the longitudinal axis of the handle of the apparatus.

112. (new) The apparatus of claim 111, wherein the locating device comprises an ultrasound imaging transducer.

113. (new) The apparatus of claim 112, further comprising an image processing system and a display device for displaying an ultrasound image of the eye produced by the ultrasound imaging transducer of the locating device, the ultrasound image of the eye providing a visual indication of when Schlemm's Canal is located in the imaging plane of the locating device distal to the tissue contacting surface of the locating device.

114. (new) The apparatus of claim 112, wherein the ultrasound imaging transducer operates at an ultrasound frequency of at least 10 MHz.

115. (new) The apparatus of claim 112, wherein the ultrasound imaging transducer operates at an ultrasound frequency of at least 40 MHz.

116. (new) The apparatus of claim 112, further comprising means to introduce an ultrasound contrast agent into the patient's aqueous humor.

117. (new) The apparatus of claim 112, wherein the locating device further comprises an audible or visible signal to indicate when Schlemm's Canal is located in the imaging plane of the locating device distal to the tissue contacting surface of the locating device.

118. (new) The apparatus of claim 112, wherein the tissue contacting surface of the locating means is curved to approximate a curve of the exterior surface on an anterior of the patient's eye.

119. (new) The apparatus of claim 118, wherein the locating means further comprises a raised ridge around a periphery of the tissue contacting surface.

120. (new) The apparatus of claim 111, wherein the microsurgical device comprises a microcannula.

121. (new) The apparatus of claim 120, wherein a distal portion of the microcannula is curved with a radius of approximately 12-14 mm to accommodate a curvature of Schlemm's Canal.

122. (new) The apparatus of claim 120, wherein the microcannula has an outer diameter of less than 200 microns.

123. (new) The apparatus of claim 120, wherein the microcannula incorporates a cutting tip to penetrate a sclera of the eye.

124. (new) The apparatus of claim 120, further comprising an inflatable dilating balloon mounted on a distal end of the microcannula.

125. (new) The apparatus of claim 120, further comprising a device having an inflatable dilating balloon mounted on a distal end of the device, wherein the distal end of the device is configured for insertion through the microcannula.

126. (new) The apparatus of claim 111, further comprising an implant configured for implantation by the microsurgical device into Schlemm's Canal to maintain flow of aqueous humor.

127. (new) The apparatus of claim 126, wherein the implant comprises a stent.

128. (new) The apparatus of claim 127, wherein the stent comprises a biodegradable material.

129. (new) The apparatus of claim 126, wherein the implant comprises microparticles.

130. (new) The apparatus of claim 129, wherein the microparticles comprise a biodegradable material.

131. (new) The apparatus of claim 126, wherein the implant comprises microspheres.

132. (new) The apparatus of claim 131, wherein the microspheres comprise a biodegradable material.

133. (new) The apparatus of claim 126, wherein the implant comprises a drug releasing material.

134. (new) The apparatus of claim 133, wherein the drug releasing material contains a drug effective in the treatment of glaucoma.

135. (new) An apparatus for treating ocular disease in a patient, comprising:

a locating device, the locating device having a tissue contacting surface configured for contacting an exterior surface of the patient's eye, the locating device adapted for non-invasively locating Schlemm's Canal within the patient's eye;

a microsurgical device;

and a surgical access device physically coupled to the locating device for guiding the microsurgical device in relation to the locating device, the surgical access device having a cantilever beam that extends axially with respect to the tissue contacting surface of the locating device, a guiding sleeve coupled to the cantilever beam, an angle adjustment mechanism for adjusting an angle of the guiding sleeve with respect to the tissue contacting surface of the locating device and a mechanism for advancing the microsurgical device through the guiding sleeve and into Schlemm's Canal within the patient's eye.

136. (new) The apparatus of claim 135, wherein the surgical access device is configured to deliver the microsurgical device into Schlemm's Canal along a path spaced apart distally from the tissue contacting surface of the locating device and approximately parallel to the tissue contacting surface of the locating device.

137. (new) The apparatus of claim 135, further comprising a handle having a longitudinal axis, wherein the tissue contacting surface is approximately perpendicular to the longitudinal axis of the handle, and wherein the surgical access device is configured to deliver the microsurgical device into Schlemm's Canal along a path approximately perpendicular to the longitudinal axis of the handle.

138. (new) The apparatus of claim 135, wherein the microsurgical device comprises a microcannula slidably positioned within the guide sleeve.

139. (new) The apparatus of claim 138, wherein the mechanism for advancing the microsurgical device through the guiding sleeve and into Schlemm's Canal within the patient's eye comprises a thumbwheel configured to engage a lead screw connected to the microcannula.

140. (new) The apparatus of claim 138, further comprising an inflatable dilating balloon mounted on a distal end of the microcannula.

141. (new) The apparatus of claim 135, wherein the locating device comprises an ultrasound imaging transducer, and wherein the apparatus further comprises an image processing system and a display device for displaying an ultrasound image of the eye produced by the ultrasound imaging transducer of the locating device, the ultrasound image of the eye providing a visual indication of when Schlemm's Canal is located in the imaging plane of the locating device distal to the tissue contacting surface of the locating device.